|  |
| --- |
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**Level – 1**

1. Which of the following can be made into crystal?

|  |  |  |  |
| --- | --- | --- | --- |
| a) A bacterium | b) An amoeba | c) A virus | d) A sperm |

1. A cell will swells up if :
2. The concentration of water molecules in the cell is higher than the concentration of water molecules in surrounding medium.
3. The concentration of water molecules in surrounding medium is higher than water molecules concentration in the cell.
4. The concentration of water molecules is same in the cell and in the surrounding medium.
5. Concentration of water molecules does not matter.
6. Chromosomes are made up of :

|  |  |  |  |
| --- | --- | --- | --- |
| a) DNA | b) Protein | c) DNA & protein | d) RNA |

1. Which of these options are not a function of Ribosomes?
2. It helps in manufacturing of protein molecules.
3. It helps in manufacturing of enzymes.
4. It helps in manufacturing of hormones.
5. It helps in manufacturing of starch molecules.

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i) & (ii) | b) (ii) & (iii) | c) (iii) & (iv) | d) (iv) & (i) |

1. Which of these is not related to endoplasmic reticulum?
2. It behaves as transport channel for proteins between nucleus and cytoplasm.
3. It transports materials between various regions in cytoplasm.
4. It can be the site of energy generations.
5. It can be the site of some biochemical activities of the cell.
6. Following are a few definitions of osmosis. Read carefully and select the correct definition.
7. Movement of water molecules from a region of higher concentration to a region of lower concentration through a semipermeable membrane.
8. Movement of solvent molecules form its higher concentration to lower concentration.
9. Movement of solvent molecules from higher concentration to lower concentration of solution through a permeable membrane
10. Movement of solute molecules from lower concentration to Higher concentration of solution through a semipermeable membrane

THE FUNDAMENTAL UNIT OF LIFE Page No. 1

1. Plasmolysis in a plant cell is defined as :
2. Break down of plasma membrane in hypotonic medium.
3. Shrinking of cytoplasm in hypertonic medium.
4. shrinking of nucleoplasm
5. None of them.
6. Which of the following are covered by a single membrane?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Mitochondria | b) Vacuole | c) Lysosome | d) Plastids |

1. Find out the correct sentence.
2. Enzymes packed in Lysosomes are made through RER (Rough endoplasmic reticulum).
3. Rough endoplasmic reticulum and smooth endoplasmic reticulum produce lipid and protein respectively,
4. Endoplasmic reticulum is related with the destruction of plasma membrane.
5. Nucleoid is present inside the nucleoplasm of eukaryotic nucleus.
6. Which cell organelle plays a crucial role in detoxifying many poisons and drugs in a cell?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Golgi apparatus | b) Lysosomes | c) SER | d) Vacuoles |

1. The proteins and lipids, essential for building the cell membrane are manufactured by :

|  |  |  |  |
| --- | --- | --- | --- |
| a) RER | b) Golgi apparatus | c) Plasma membrane | d) Mitochondria |

1. The undefined nuclear region of prokaryotes are known as :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Nucleus | b) Nucleolus | c) Nucleic acid | d) Nucleoid |

1. The cell organelle involved in forming complex sugars from simple sugars are :

|  |  |  |  |
| --- | --- | --- | --- |
| a) ER | b) Ribosomes | c) Plastids | d) Golgi apparatus |

1. Which out of the following is not a function of vacuole?

|  |  |
| --- | --- |
| a) Storage | b) Provide turgidity and rigidity of the cell |
| c) Waste excretion | d) Locomotion |

1. Amoeba acquires its food through a process, termed:

|  |  |  |  |
| --- | --- | --- | --- |
| a) Exocytosis | b) Endocytosis | c) Plasmolysis | d) Both (a) & (b) |

1. Cell wall of which one of these is not made up of cellulose?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Bacteria | b) Hydrilla | c) Mango tree | d) Cactus |

1. Silver nitrate solution is used to study :

|  |  |  |  |
| --- | --- | --- | --- |
| a) ER | b) Golgi apparatus | c) Nucleus | d) Mitochondria |

1. Organelle other than nucleus, containing DNA is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) ER | b) Golgi apparatus | c) Mitochondria | d) Lysosome |

1. Kitchen of the cell is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Mitochondria | b) ER | c) Chloroplast | d) Golgi apparatus |

1. Lipid molecules in the cell are synthesized by :

|  |  |  |  |
| --- | --- | --- | --- |
| a) SER | b) RER | c) Golgi apparatus | d) Plastids |

1. Cell arises from pre – existing cell was stated by :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Haeckel | b) Virchow | c) Hooke | d) Schleiden |

1. Cell theory was given by :

|  |  |
| --- | --- |
| a) Schleiden and Schwann | b) Virchow |
| c) Hooke | d) Haeckel |

THE FUNDAMENTAL UNIT OF LIFE Page No. 2

1. The only cell organelle seen in prokaryotic cell is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Mitochondria | b) Ribosomes | c) Plastids | d) Lysosomes |

1. Organelle without a cell membrane is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Ribosomes | b) Golgi apparatus | c) chloroplast | d) Nucleus |

1. 1 m is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) 10 – 6 m | b) 10 – 9 m | c) 10 – 10 m | d) 10 – 3 m |

1. Lysosomes arises from :

|  |  |  |  |
| --- | --- | --- | --- |
| a) ER | b) Golgi apparatus | c) Nucleus | d) Mitochondria |

1. Living cell were discovered by :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Robert Hooke | b) Purkinje | c) Leeuwenhoek | d) Robert brown |

1. Select the odd one out.
2. The movement of water across a semi-permeable membrane is affected by the amount of substances dissolved in it.
3. Membranes are made of organic molecules like proteins and lipids.
4. Molecules soluble in organic solvents can easily pass through the membrane.
5. Plasma membranes contain chitin sugar in plants.
6. You expect RBCs to burst when they are placed in :

|  |  |
| --- | --- |
| a) Hypotonic solution | b) Hypertonic solution |
| c) Isotonic solution | d) Any of the above |

1. When dried raisins are put in pure water for sometime, they swell up. Swelling up of raisins occur due to:

|  |  |  |  |
| --- | --- | --- | --- |
| a) Exosmosis | b) Endosmosis | c) Both (a) & (b) | d) Neither (a) & (b) |

**Answers**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1. c | 1. b | 1. c | 1. c | 1. c | 1. a | 1. b | 1. b , c |
| 1. a | 1. c | 1. a | 1. d | 1. d | 1. d | 1. b | 1. a |
| 1. b | 1. c | 1. c | 1. a | 1. b | 1. a | 1. b | 1. a |
| 1. a | 1. b | 1. c | 1. d | 1. a | 1. b |  |  |

THE FUNDAMENTAL UNIT OF LIFE Page No. 3

**Level – 2**

1. Which one of the following is not a unicellular organism?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Amoeba | b) Paramecium | c) Chlamydomonas | d) Fungi |

1. Which one of the following organisms has changing shapes?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Amoeba | b) Euglena | c) Paramecium | d) Acetabularia |

1. Name the process by which CO2 moves out of the cells.

|  |  |  |  |
| --- | --- | --- | --- |
| a) Dialysis | b) Diffusion | c) Phagocytosis | d) Pinocytosis |

1. Name the process by which water moves across the selectively permeable membrane.

|  |  |  |  |
| --- | --- | --- | --- |
| a) Dialysis | b) Diffusion | c) Osmosis | d) Exocytosis |

1. If a membrane allows passage of solvent freely but selects the passage of specific solute particles, it is called as :

|  |  |
| --- | --- |
| a) Impermeable | b) Permeable |
| c) Semi-permeable | d) Selectively permeable |

1. Which one of the following is the advantage of selective permeability of the membrane?

|  |  |
| --- | --- |
| a) Useful molecules enter the cell | b) Metabolic intermediates remain within the cell |
| c) Secretions and wastes leave the cell | d) All of these |

1. The phenomenon of shrinking of protoplast from the cell wall due to Exosmosis in a plant cell when placed in a hypertonic solution is called :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Dialysis | b) Deplasmolysis | c) Plasmolysis | d) Imbibition |

1. Which of the following are present in plant cells and not in animal cells?

|  |  |
| --- | --- |
| a) Mitochondria and Plastids | b) Mitochondria and Cell wall |
| c) Cell wall and Lysosomes | d) Cell wall and Plastids |

1. Which cell organelle plays a role during metamorphosis of frog?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Mitochondria | b) Lysosomes | c) Nucleus | d) ER |

1. The two arms of each chromosome are termed :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Chromatin fibres | b) Centromeres | c) Chromatids | d) None of these |

1. In plant cells, many small Golgi complexes called dictyosomes are found lying :

|  |  |
| --- | --- |
| a) Scattered throughout the cytoplasm | b) At specific site close to nuclear membrane |
| c) Attached to green plastids | d) Attached to cell membrane |

1. Inner membrane of mitochondria and chloroplasts is :

|  |  |
| --- | --- |
| a) Impermeable | b) Selectively permeable |
| c) Semi-permeable | d) Permeable |

1. Which type of plastids provide various colours to flowers to attract insects for pollination?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Chloroplasts | b) Amyloplasts | c) Aleuroplasts | d) Chromoplasts |

1. Many unicellular organisms possess specialized vacuoles that are associated with :

|  |  |
| --- | --- |
| a) Maintenance of water balance of the body | b) Storage function |
| c) Turgidity and Rigidity | d) All of these |

THE FUNDAMENTAL UNIT OF LIFE Page No. 4

1. Mitosis, in plants occurs :

|  |  |
| --- | --- |
| a) In meristematic tissues | b) During the growth of leaves, flowers and fruits |
| c) Both (a) & (b) | d) Neither (a) & (b) |

1. Plant cells do not show endocytosis because :
2. They have a rigid cell wall and internal turgor pressure
3. They have a large vacuole inside.
4. They have a nucleus which is pushed to one side
5. They show phenomenon of plasmolysis
6. Streaming of cytoplasmic matrix, serving many functions in cells, is termed:

|  |  |  |  |
| --- | --- | --- | --- |
| a) Cytosol movement | b) Cyclosis | c) Exocytosis | d) Endocytosis |

1. Infolds of inner membrane of chloroplasts, when become free, lie in the matrix as :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Cristae | b) Stroma | c) lamellae | d) none of these |

1. What is the energy currency of the cell?

|  |  |  |  |
| --- | --- | --- | --- |
| a) ADP | b) AMP | c) ATP | d) FAD |

1. A plant cell placed in a hypotonic solution will not burst because of the presence of :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Cell wall | b) plasma membrane | c) chloroplast | d) Cytoplasm |

1. What is the meaning of “Omnis Cellula-e-cellulae” ?

|  |  |
| --- | --- |
| a) All organisms are composed of cells | b) Cells arise from the division of pre-existing cells |
| c) Cells are capable of repairing themselves | d) Cells are the basic structural unit of an organism |

1. If the ribosomes of the cell are destroyed then :

|  |  |
| --- | --- |
| a) Respiration will stop | b) Fats will not be stored |
| c) Carbon assimilation will stop | d) Proteins will not be formed |

1. In a cell, transportation of materials occurs by :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Golgi complex | b) ER | c) Lysosomes | d) Mitochondria |

**Answers**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1. d | 1. a | 1. b | 1. c | 1. d | 1. d | 1. c | 1. d |
| 1. b | 1. c | 1. a | 1. b | 1. d | 1. d | 1. c | 1. a |
| 1. b | 1. c | 1. c | 1. a | 1. b | 1. d | 1. b |  |

THE FUNDAMENTAL UNIT OF LIFE Page No. 5

**Paragraph Based Questions**

**Question numbers 1 to 5 are based on the following paragraph.**

**Paragraph 1 :** Literally speaking, cell division is the process by which new cells are formed. It is of two main types : Mitosis and Meiosis.

Unlike mitosis, meiosis is only confined to specific cells called meiocytes of reproductive organs or tissues in animals, plants, various protists and fungi. It takes place at a particular time. These specific cells divide to form gametes. Mitosis, on the other hand, occurs in all kinds of cells and may continue throughout life.

1. How many daughter cells are formed in meiosis?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 1 | b) 2 | c) 3 | d) 4 |

1. Which of the following divisions is also termed as somatic division?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Mitosis | b) Meiosis | c) Both (a) & (b) | d) Neither (a) & (b) |

1. What is the nuclear DNA content of each daughter cell after mitosis?

|  |  |
| --- | --- |
| a) Half as that of mother cell | b) Same as that of mother cell |
| c) 1/4th as that of mother cell | d) Double as that of mother cell |

1. How many consecutive divisions occur in meiosis?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 2 | b) 1 | c) 3 | d) 4 |

1. In multicellular organisms, cell division occurs :
2. To bring about embryonic development and growth
3. To replace old, worn out dead and injured cells.
4. To form gametes for reproduction
5. To form macronutrients and micronutrients

|  |  |  |  |
| --- | --- | --- | --- |
| a) (ii) , (iii) are true | b) (i), (ii), (iii) are true | c) (i), (ii), (iii), (iv) are true | d) Only (iii) is true |

**Question numbers 6 to 10 are based on the following paragraph.**

**Paragraph 2 :** Mitochondria are found in all aerobic eukaryotic cells and lack in prokaryotes, anaerobic protozoans and some cells of mammals. They are usually sausage-shaped, but may be spherical, oval, cylindrical, filamentous or even branched. They are common called ‘Power House’ or ‘Storage Batteries’ of the cell. Plastids are other cytoplasmic organelles found in the plant cell and certain protists but are absent in animal cells. They are called the ‘Kitchen of the cell’.

1. Which cell organelle is bounded by double membrane envelope?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Mitochondria | b) Plastid | c) Ribosome | d) Both (a) & (b) |

1. The inner membrane of mitochondria is thrown into numerous folds to increase its surface area. Which of the following is the name of such folds?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Villi | b) Microvilli | c) Cristae | d) Lamellae |

1. Which main light absorbing pigment is present in green plastids?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Xanthophyll | b) Chlorophyll | c) Phycobilin | d) Carotenoids |

THE FUNDAMENTAL UNIT OF LIFE Page No. 6

1. What is the main function of mitochondria of the cells?

|  |  |
| --- | --- |
| a) Site of photosynthesis | b) Site of cell respiration |
| c) Site of protein synthesis | d) Site of packaging of cell materials |

1. The plastids present in higher plants are categorized as :

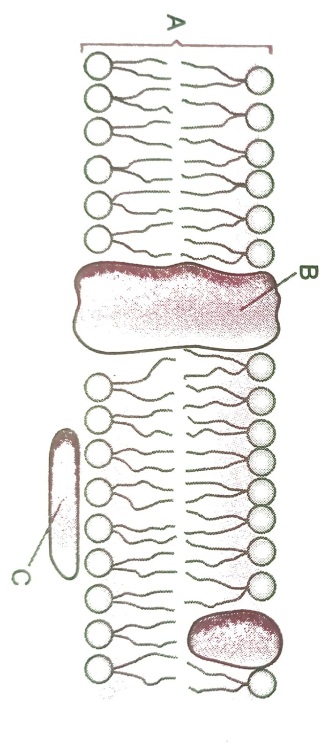
|  |  |  |  |
| --- | --- | --- | --- |
| i) Amyloplasts | ii) Aleuroplasts | iii) Chromoplasts | iv) Elaioplasts |

Which of the above are known as storage plastids?

|  |  |  |  |
| --- | --- | --- | --- |
| a) (iii) only | b) (i), (ii) only | c) (i), (ii), (iii) only | d) (i), (ii), (iv) only |

**Question numbers 11 to 14 are based on the following paragraph.**

**Paragraph 3 :** Given in the figure is structural detail of the plasma membrane. The model as depicted in figure is the most accepted model termed as fluid mosaic model. Study the figure carefully and then answer the following questions:



1. Fluid mosaic model was presented by :

|  |  |
| --- | --- |
| a) Singer and Nicolson (1972) | b) Danielli and Davson (1935) |
| c) Robertson (1959) | d) Robert brown (1858) |

1. Which marked part in the figure represents intrinsic protein?

|  |  |  |  |
| --- | --- | --- | --- |
| a) A | b) B | c) C | d) None of these |

1. Plasma membrane of the cell is :

|  |  |
| --- | --- |
| a) Permeable | b) Impermeable |
| c) Semi-permeable | d) Selectively permeable |

1. Following are few statements which may be related to functions of plasma membrane. Select the correct statements :
2. Plasma membrane maintains individuality of the cell.
3. Its junction keep the cells together.
4. It forms organelles with in the cytoplasm.
5. It protects the cell form injury.

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i), (ii), (iii), (iv) only | b) (i), (ii) only | c) (i), (ii), (iv) only | d) (iii), (iv) only |

**Answers**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1. d | 1. a | 1. b | 1. a | 1. b | 1. d | 1. c | 1. b |
| 1. b | 1. d | 1. a | 1. b | 1. d | 1. a |  |  |

THE FUNDAMENTAL UNIT OF LIFE Page No. 7

**Fill in the Blanks**

1. Mitosis helps in \_\_\_\_\_\_\_\_\_\_\_ and repair of tissues by replacing old, worn out dead cells or injured cells in organisms.
2. Cells are the \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_ units of all organisms.
3. The process that involves fusion of membrane of the waste containing vesicle with the plasma membrane to extrude its contents to the surrounding medium is called \_\_\_\_\_\_\_\_\_\_.
4. Mitosis is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as it forms equal sized 2 daughter cells, each having same number of chromosomes and DNA amount as that of mother cell.
5. Meiosis occurs only in specific cells are called \_\_\_\_\_\_\_\_\_\_\_\_\_ and produces \_\_\_\_\_\_\_\_\_\_\_\_\_ daughter cells, each having \_\_\_\_\_\_\_\_\_\_\_\_\_ the number of chromosomes as that of mother cell.
6. RBCs swell up and \_\_\_\_\_\_\_\_\_\_\_\_ when placed in hypotonic solution due to the phenomenon of \_\_\_\_\_\_\_\_\_\_\_\_.
7. Phenomenon of endocytosis is not shown by \_\_\_\_\_\_\_\_\_\_\_\_\_ cells because of their \_\_\_\_\_\_\_\_\_\_\_ and internal \_\_\_\_\_\_\_\_\_\_\_ pressure.
8. Yeast, bacteria and all protists are examples of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ organisms, wherein a single cell constitutes the whole organism.
9. If a membrane allow penetration of only solvent molecules but not the solute particles, it is called \_\_\_\_\_\_\_\_\_\_\_\_\_.
10. If a membrane does not allow both solvent and solute molecules to pass through it, it is called \_\_\_\_\_\_\_\_\_\_\_ membrane. Example of such membrane is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
11. \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_ are present in plant cells but absent in animal cells.
12. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ model provides satisfactory explanation of the structural and functions of plasma membrane.
13. Primary cell wall in plants is chiefly made up of \_\_\_\_\_\_\_\_\_\_. The primary cell walls of adjacent cells are cemented through \_\_\_\_\_\_\_\_\_\_\_\_\_.
14. Plant cell is \_\_\_\_\_\_\_\_\_\_\_\_ when it has only primary cell and becomes \_\_\_\_\_\_\_\_\_\_ when secondary wall is deposited on the inner surface of primary wall.
15. The outer nuclear membrane bears \_\_\_\_\_\_\_\_\_\_\_ on the cytoplasmic side and at places is also connected with \_\_\_\_\_\_\_\_\_\_\_\_.
16. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are thread like structures present in the nucleus and become visible only during cell division.
17. The two \_\_\_\_\_\_\_\_\_\_\_\_ of chromosome are attached at a point called primary constriction of \_\_\_\_\_\_\_\_\_\_\_.
18. 70 S types ribosomes are found in \_\_\_\_\_\_\_\_\_ cells and 80 S types ribosomes are found in \_\_\_\_\_\_\_\_\_\_\_ cells.
19. Golgi complex was discovered by \_\_\_\_\_\_\_\_\_\_ in 1898

THE FUNDAMENTAL UNIT OF LIFE Page No. 8

**Answers**

1. Growth 2. Structural , functional 3. Exocytosis 4. Equational division

5. Meiocytes , 4 , half 6. Burst , Endosmosis 7. Plant , Cell wall , Turgor 8. Unicellular

9. Semipermeable 10. Impermeable , cuticle layer 11. Cell wall , Plastids

12. Fluid Mosaic 13. Cellulose , Middle lamella 14. Living , Dead

15. Ribosomes , Endoplasmic reticulum 16. Chromosomes 17. Chromatids , centromere

18. Prokaryotic , Eukaryotic 19. Camillo Golgi

THE FUNDAMENTAL UNIT OF LIFE Page No. 9

**True/False**

1. Lamellae in the coloured plastids, are closed, flattened, membrane bound sacs are called thylakoids which lie closely packed in piles called grana.
2. The grana are the sites of dark reaction during photosynthesis.
3. Leucoplasts the non-green plastids have red, orange, yellow etc. pigments due to presence of carotenoids.
4. ATP, the energy currency of the cell is expanded as Adenosine triphosphate.
5. Lysosomes are tiny, spherical structures which contain dense, finely granular fluid having hydrolytic enzymes.
6. Mitochondria are present in aerobic eukaryotic cells, anaerobic protozoans and in prokaryotes.
7. Golgi complex modifies, sort and packages the material coming from the ER or synthesized in the Golgi itself.
8. Ribosomes was first discovered by Camillo Golgi under electron microscope.
9. The size of ribosomes is determined by the speed with which they sediment in the centrifugal field.
10. Animal cell have a centrosome containing centrioles but plant cells do not have them.
11. Mitosis occurs in specific cells called meiocytes and occurs at a specific time only.
12. Meiosis is a reduction division and it helps to keep the number of chromosomes constant in the cells from generation to generation.
13. Cell inclusions are living materials present in the cytoplasm and the nucleus.
14. RBCs when placed in concentrated sugar solution, swell up and burst due to the phenomenon of endosmosis.
15. The inner membrane of mitochondria and chloroplasts are selectively permeable.
16. DNA, present in the matrix of the mitochondria is circular.
17. Golgi complex give rises to the acrosome in an animal cell.
18. Lysosomes also play important role during metamorphosis of frog.
19. RER is free of ribosomes while SER has ribosomes attached on its cytoplasmic surface.
20. Nucleus controls all the metabolic activities of the cell and also contains genetic information in the form of gens located in the chromosomes.

**Answers**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. True | 1. False | 1. False | 1. True | 1. True |
| 1. False | 1. True | 1. False | 1. True | 1. True |
| 1. False | 1. True | 1. False | 1. False | 1. True |
| 1. True | 1. True | 1. True | 1. False | 1. True |

THE FUNDAMENTAL UNIT OF LIFE Page No. 10

**Matching Type Questions**

1. Column I Column II

|  |  |
| --- | --- |
| (A) Ribosomes | (i) Kitchen of the cell |
| (B) Lysosomes | (ii) Powerhouse of the cell |
| (C) Chloroplasts | (iii) Natural scavengers of the cell |
| (D) Mitochondria | (iv) Protein factories of the cell |

1. Column I Column II

|  |  |
| --- | --- |
| (A) Cell wall | (i) Outer covering of animal cell and is selectively permeable |
| (B) Plasma membrane | (ii) Made of cellulose and provides protection to plant cell |
| (C) Nucleus | (iii) Double membrane bound cell organelle and are main seat of cell  respiration |
| (D) Mitochondria | (iv) Regulates cellular functions and has chromatin material |

1. Column I Column II

|  |  |
| --- | --- |
| (A) Red blood cells when placed in hypotonic  solutions swell up and burst | (i) There is no net movement of water across the  Semipermeable membrane |
| (B) When swollen raisins are put in  concentrated sugar solution they shrink. | (ii) The cells of Rheo leaf show plasmolysis |
| (C) When Red blood cells are placed in isotonic  (Ringer’s solution) they appear normal | (iii) Endosmosis |
| (D) When few drops of concentrated salt  solution are put on turgid Rheo leaf | (iv) Exosmosis |

1. Column I Column II

|  |  |
| --- | --- |
| (A) Compound Microscope | (i) Large instrument. It uses beam of electrons and electro  magnets. For its working internal vacuum is essential. |
| (B) Electron Microscope | (ii) Uses light as source of illumination. It has 2 lens: Objective  and Eye-piece to magnify the image. |
| (C) Mitosis | (iii) Reduction division. It produces four daughter cells , each  having half the number of chromosomes as that of mother. |
| (D) Meiosis | (iv) Equational division. It produces two equal sized daughter  cells having same number of chromosomes as that of  mother cell. |

**Answers**

1. A – (iv) ; B – (iii) ; C – (i) ; D – (ii) 2. A – (ii) ; B – (i) ; C – (iv) ; D – (iii)

3. A – (iii) ; B – (iv) ; C – (i) ; D – (ii) 4. A – (i) ; B – (ii) ; C – (iv) ; D – (iii)

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**Assertion-Reason Type Questions**

**DIRECTIONS :** In each of the following questions, a statement of Assertion (A) is given followed by a corresponding statement of Reason (R) just below it. Of the statements, mark the correct answer as:

1. If both assertion and reason are true and reason is the true explanation of the assertion.
2. If both assertion and reason are true, but reason is not the true explanation of the assertion.
3. If assertion is true, but reason is false.
4. If assertion is false, but reason is true.
5. **Assertion:** Mitosis is a means of multiplication in unicellular organisms.

**Reason:** Mitosis in the multicellular organisms brings about growth and repair.

1. **Assertion:** Meiosis is called reduction division.

**Reason:** It halves the chromosomes number in the daughter cells.

1. **Assertion:** An animal cell swells up when present in a hypotonic solution.

**Reason:** More water molecules enter the cell than they leave.

1. **Assertion:** Mitochondria are called the powerhouse of the cell.

**Reason:** Mitochondria produce cellular energy in the form of ATP.

1. **Assertion:** Both chloroplasts and mitochondria are semi-autonomous organelles.

**Reason:** They are formed by division of pre-existing organelles and contain DNA but lack protein synthesizing machinery.

1. **Assertion:** Plasma membrane is selectively permeable.

**Reason:** Plasma membrane allows all molecules to pass through it easily.

1. **Assertion:** Lysosomes are organelle in eukaryotic cells that contain digestive enzymes to digest macromolecules.

**Reason:** Lysosomes are also called Phagolysosomes or heterophagosomes or digestive vacuoles.

1. **Assertion:** Ribosomes are the only organelle are found in both eukaryotic and prokaryotic cells.

**Reason:** Ribosomes are cell’s protein factories that are essential for cells.

1. **Assertion:** Nuclear envelope has pores in it.

**Reason:** Nuclear pores allow exit of ribosomal subunits, mRNA and tRNA.

1. **Assertion:** Plant cell wall lacks selective permeability.

**Reason:** It allows free passage of dissolved materials through it.

**Answers**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1. b | 1. a | 1. a | 1. a | 1. c | 1. c | 1. a | 1. a |
| 1. a | 1. a |  |  |  |  |  |  |

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